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RESEARCH ARTICLE

PROXIMATE COMPOSITION OF DEHYDRATED BRAHMI, ASHWAGANDHA AND CURCUMIN EXTRACT TO CURE DEMENTIA DISEASE

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ABSTRACT

Brahmi, Ashwagandha and Curcumin is valued herbs are used in ayurveda medicine and such was used and cultivated from long periods in India. It possess therapeutic value against a large number of ailments such as brain/Dementia diseases, asthma, inflammation, arthritis rheumatism, tuberculosis, infections, fever, diseases including cancer. Brahmi (*Bacopa monnieri*), Ashwagandha (*Withania somnifera*) and Curcumin (*Curcuma longa)* extract was incorporated directly with other ingredients of herbal products. It is helpful in curing the Dementia disease. The key objective of this study is to analyze the proximate composition and antioxidant content of the dehydrated Brahmi, Ashwagandha and Curcumin extract. In this study, proximate analysis standard methods of AOAC (2007) were used. It was found that dehydrated proximate analysis, minerals and vitamin content of dehydrated Brahmi, Ashwagandha and Curcumin extract Per 100 g. Proximate composition of Brahmi, Ashwagandha and Curcumin extract (Per 100g) obtained by chemical analysis in form of Moisture, Ash, Protein, Crude Fiber, Carbohydrate, Iron, Calcium, Total carotene, Vitamin C.

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INTRODUCTION

In Recent time, some of the alternative therapeutic and preventive strategies adopted for long-term use as a dementia inhibitor. There is a highly efficient Indian herb that can reduce and prevent the growth of dementia by consuming them. In Indian culture, the home remedies and organic usage of herbs and plants is widely spread and is frequently used in current times also. Brahami, Ashwagandha and Curcumin plant extract use for the wellbeing of mankind. Herbal products are very useful for the healthy survival. Herbal products also need to control the quality standards for the betterment of the mankind.

Brahmi (Bacopa monnieri): Brahmi is a plant that has been used in traditional Indian medicine (Ayurveda). Be careful not to confuse brahmi (Bacopa monnieri) with gotu kola and other natural medicines that are also sometimes called brahmi. Bacopa monnieri known as brahmi, water hyssop, Bacopa monniera**,** and Herpestis monniera**),** is a creeping perennial with small oblong leaves and purple flowers, found in warm wetlands, and native to Australia and India. Commonly found as a weed in rice fields, BM grows throughout East Asia and the United States. (Barrett, 1978) The entire plant is used medicinally.

Brahmi is used for Dementia disease, improving memory, anxiety, attention deficit-hyperactivity disorder (ADHD), allergic conditions, irritable bowel syndrome, and as a general tonic to fight stress. People also take brahmi to treat backache, hoarseness, mental illness, epilepsy, joint pain, and sexual performance problems in both men and women. It is also sometimes used as a "water pill."Brahmi might increase certain brain chemicals that are involved in thinking, learning, and memory. Some research suggests that it might also protect brain cells from chemicals involved in Alzheimer's disease.

Unlike the potentially addictive and forceful action of widely used psychostimulants, chronic and moderate administration of BM appears to nourish rather than deplete neurons, an action

compatible with 1400 years of Ayurvedic study. BM was initially described around the 6th century A.D. in texts such as the Charaka Samhita, Athar Ved, and Susrutu Samhita as a medhya rasayana–class herb taken to sharpen intellect and attenuate mental deficits. The herb was allegedly used by ancient Vedic scholars to memorize lengthy sacred hymns and scriptures. BM is colloquially called Brahmi, after the Hindu creator-god Brahma, especially when combined with other alleged intellect-sharpening herbs. Saini *et al*. (2012) found that BM (50 mg/kg per day oral) supplementation reversed memory impairment.

Ashwagandhha (*Withania somnifera*): Ashwagandha (*Withania somnifera*, fam. Solanaceae) is commonly known as "Indian Winter cherry" or "Indian Ginseng". It is one of the most important herb of Ayurveda (the traditional system of medicine in India) used for millennia as a Rasayana for its wide ranging health benefits. Rasayana is described as an herbal or metallic preparation that promotes a youthful state of physical and mental health and expands happiness. These types of remedies are given to small children as tonics, and are also taken by the middle-aged and elderly to increase longevity. Among the ayurvedic Rasayana herbs, Ashwagandha holds the most prominent place. It is known as "Sattvic Kapha Rasayana" Herb (Changhadi, 1938). Most of the Rasayana herbs are adaptogen / anti-stress agents.

Ashwagandha is commonly available as a churna, a fine sieved powder that can be mixed with water, ghee (clarified butter) or honey. It enhances the function of the brain and nervous system and improves the memory. It improves the function of the reproductive system promoting a healthy sexual and reproductive balance. Being a powerful adaptogen, it enhances the body's resilience to stress. Ashwagandha improves the body's defense against disease by improving the cell-mediated immunity. It also possesses potent antioxidant properties that help protect against cellular damage caused by free radicals. Ashwagandha root contains a large variety of compounds including 12 alkaloids, 40 withanolides, and several sitoindosides and flavonoids (Mishra & Singh, 2000; Mirjalili *et al*., 2009). The beneficial effects of Ashwagandha root constituents in neurodegenerative diseases may be due to their neurite promoting, antioxidant, anti-inflammatory, antiapoptotic, and anxiolytic activities, as well as their ability to improve and restore energy levels and increase levels of antioxidant defenses such as reduced glutathione (Singh *et al.,* 2011).

Curcumin (*Curcuma longa*): *Curcuma longa*, a member of the ginger family (*Zingiberaceae*), has rhizomes below the ground. Curcuma longa has been used for thousands of years as a remedy in the traditional Indian and folk medicine for the cure of a large variety of illnesses, such as inflammation, infectious diseases, and gastric, hepatic, and blood disorders. Curcumin is a major isolated polyphenol from the rhizome of turmeric (*Curcuma longa*). It has a wide range of pharmacological effects such as antioxidant, anti-inflammatory, antimicrobial, antitumor, and hepatoprotective activities. *Curcuma longa* is a unique plant combining properties of a spice, colorant, cosmetic and a drug useful in a number of diseases. It is used as spice, herbal medicines, dyeing agents and cosmetics since vedic age (Salvi *et al*., 2000; Shirgurkar *et al*., 2001). The significance of turmeric in health and nutrition has greatly been recognized since the discovery of the pharmaceutical properties of naturally occurring phenolic compounds in it. It has been found that the dried rhizome of turmeric is a rich source of beneficial phenolic compounds known as the curcuminoids (Lechtenberg *et al*., 2004).

Dementia Disease: Health Report 2003, the Global Burden of Disease estimates for the dementia, contributed highest number of years lived with disability in people aged 60 years and older which is more than stroke (95%), musculoskeletal disorders (89%), cardiovascular disease (50%), and all forms of cancer (24%). The disability weight for dementia, estimated by an international and multidisciplinary expert consensus, was higher than for almost any other health condition, apart from spinal cord injury and terminal cancer. Dementia is one of the major causes of disability in later life.

It accounts for 11.9% of the years lived with disability due to a non-communicable disease. It is also the leading cause of dependency i.e. need for care) among older persons in both high income countries and Low and Middle Income Countries. The estimated worldwide cost of dementia is estimated to have been US 604 billion in 2010. Direct medical care costs contribute to just 16% of the global cost. In low-income countries, most costs are due to informal care i.e. unpaid care provided by family members and others. (WHO Report - Dementia a Public health priority 2012).

Recently, Dementia has emerged to be a critical threat to global health and society. There was estimation that in the whole world, 35.6 million people were affected by dementia in the year 2010 and it was also predicted that the population was doubled every 20 years along with the world population aging (Brookmeyer, 2007). Owing to the fast rise in cases of dementia, this disease has emerged to be a death-factor that is increasing around the entire world (Seixas *et al*., 2014). Prince *et al*., (2013) studied that Dementia is any disorder where significant decline from one's previous level of cognition causes interference in occupational, domestic, or social functioning. Generally, dementia should be considered to be an acquired syndrome, with multiple possible causes, rather than a specific disease itself.

For example, the dementia syndrome of progressive decline in language can be caused by various diseases, such as Alzheimer disease, a tumor in the language cortex, or front otemporal lobar degeneration. Global estimates of dementia prevalence are up to 7% of individuals above the age of 65, with a slightly higher prevalence (8-10%) in developed countries due to longer life spans. Baumgart *et al*., (2015) Advancing age, genetic profile, and systemic vascular disease are major risk factors for developing dementia.

Ropper *et al*. (2014) studied that Dementia can arise when patients develop a deficiency or derangement of vitamin levels or nutrients. Severe thiamine (vitamin B1) deficiency can cause a disease called Wernicke encephalopathy in its earliest phases and Korsakoff syndrome if it converts to a chronic memory disorder. Sechi G, Serra A. (2007) explore that It is most commonly seen in chronic alcoholics and those with poor nutritional intake. Wernicke encephalopathy usually presents abruptly as neurons deficient in thiamine undergo necrosis. Classically, the clinical triad includes gait ataxia, delirium, and ophthalmoplegia, but less than 20% of patients present with all three signs.

MATERIALS AND METHODS

The experiment has been carried out in Research laboratory of food science and technology, school for Home Science, Babasaheb Bhimrao Ambedkar University, Lucknow. The nutritional analysis was conducted on analysis laboratory of Lucknow. Chemical analysis for proximate composition of moisture, ash, fat, protein and fibre of dehydrated Brahmi (*Bacopa monnieri*), Ashwagandha (*Withania somnifera*) and Curcumin (*Curcuma longa*) extract and best treatment of developed food products were done by using standard methods of AOAC (2007). Iron was determined by using calorimetric method and calcium was determined by titration method respectively. Vitamin C was determined by 2, 6-Dichlorophenol dye method. Total carotene was assessed by the method of Ranganna (2001). Polyphenols by Folin-Ciocalteu phenol method and antioxidant, by DPPH Radical Scavenging Method (Brand *et al*., 1995).

RESULT AND DISCUSSION

Proximate analysis it was found that dehydrated medicinal herbs powder Per 100 g. Proximate composition of Brahmi extract (Per 100g) obtained by chemical analysis is as follows, Moisture was found to be 9.2%, Ash was found to be 3.35g, the amount of Protein was 2.37g, fat was 0.8g, the amount of Crude Fiber was 2.1g, Energy was 24 Kcal, Carbohydrate was 3.09g, Iron was 2.07mg, the Calcium content was 23mg, Total carotene was 81.5 µg and Vitamin C was 4.7mg/100g. Proximate composition of Ashwagandha root powder (Per 100g) obtained by chemical analysis is as follows, Moisture was found to be 7.35%, Ash was found to be 4.21g, the amount of Protein was 3.19g, Fat was 0.1g, the amount of Crude Fiber was 31.3g, Energy was 240Kcal, Carbohydrate was 48.5g, Iron was 2.9mg, the Calcium content was 22mg, Total carotene was 74.7 µg and Vitamin C was 3.4 mg/100g. Proximate composition of Curcumin extract (Per 100g) obtained by chemical analysis is as follows moisture was found to be 11.3%, Ash was found to be 4.02g, the amount of Protein was 6.01g, fat was 3.4g, the amount of Crude Fiber was 19.1g, Energy was 210 Kcal, Carbohydrate was 40.35g, Iron was 9.5mg, the Calcium content was 85.7mg, Total carotene was 74.7µg and Vitamin C was 8.7mg/100g.

Table 1.1 Proximate analysis, minerals and vitamin content of dehydrated medicinal herbs extract Per 100 g

Proximate Values	Brahmi Extract	Ashwagandha Extract	Curcuumin Extract
Moisture (%)	9.27	7.35	11.03
Ash (g)	3.35	4.21	4.02
Protein (g)	2.27	3.19	6.01
Fat(g)	0.8	0.2	3.4
Crude Fiber (g)	2.1	31.3	19.1
Energy (kcal)	24	240	210
Carbohydrate (g)	3.09	48.5	40.35
Iron (mg)	2.07	2.9	9.5
Calcium(mg)	23	22	85.7
Total carotene(µg)	81.5	74.7	74.7
Vitamin C (mg)	4.8	3.4	8.7

Polyphenols content was found to be 12.78mg and Free radical scavenging activity (DPPH) was found to be 71.1% in Brahmi extract while in Ashwagandh extract Polyphenols was 17.35mg and Free radical scavenging activity (DPPH) was 65.10Polyphenols content was found to be 696.2mg and Free radical scavenging activity was found to be 70.52% in Curcumin extract. Table and figure are shown in below.

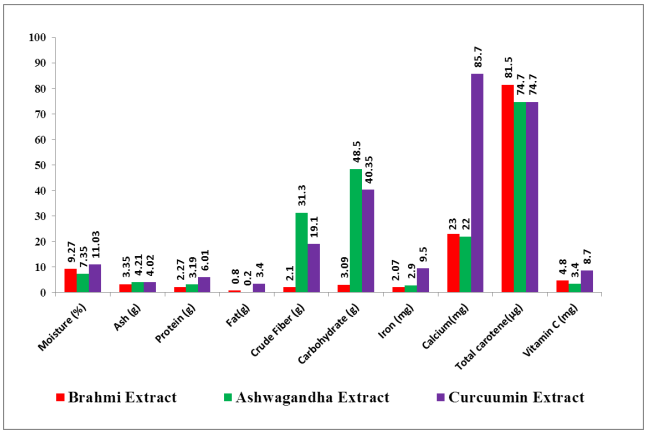

Fig 1.1. Proximate analysis, minerals and vitamin content of dehydrated medicinal herbs extract Per 100 g (Except energy)

Table 1.2. Proximate analysis, antioxidant content of dehydrated medicinal herbs powder Per 100 g

Proximate Values	Brahmi Extract	Ashwa gandha Extract	Curcumin Extract
Polyphenols (mg)	12.78	17.35	696.2
Free radical scavenging activity (DPPH) %	71.1	65.10	70.52

Conclusion

The outcomes of this study concluded that dehydrated medicinal herbs Brhami, Ashwagandha and Curcumin containing extract herbal product was found most highly useful in Dementia disease. The content of carbohydrates energy in the proximate analysis of prepared products (Laddus) showed that the Protein, fat, Crude Fiber, Energy, Carbohydrate, Iron, Calcium and vitamin C content of the prepared products were increased by the incorporation of medicinal root extract with other ingredients. The antioxidant content such as total polyphenol and anti radical scavenging activity were also significantly improved in herbal food product (Laddus). As the Incorporation level of the dehydrated Medicinal herbs leaves increased, the cost of prepared products decreased.

Recommendation

- Brhami, Ashwagandha and Curcumin containing herbal products consider the medicinal properties reported by other researchers, to the product which can be used against dementia disease, heart diseases, anxiety, type 2 diabetes and certain types of cancer. It strengthens and nourishes the full body .
- Brhami, Ashwagandha and Curcumin containing herbal products makes up for the deficiency of dietary fiber and good quality of antioxidant, Polyphenols and Vitamin C.
- Incorporation of Brhami, Ashwagandha and Curcumin extract can be recommended to be including in preparation of foods of the daily diet of the individuals so that the many benefits of these are available to the consumers under both normal and therapeutic conditions.

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